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Recent occurrence of *Tinamus solitarius* (Vieillot, 1819) (Tinamiformes, Tinamidae) in central Rio Grande do Sul state, southern Brazil

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Abstract

Tinamus solitarius (Vieillot, 1819), the Solitary Tinamou, was observed in the central region of Rio Grande do Sul state, on the western portion of the Serra Geral escarpment, in the municipality of Itaara. This population is the most austral of the species and is isolated from the 2 other populations that inhabit Rio Grande do Sul: 1 in Turvo State Park and the other in the eastern portion of the Serra Geral escarpment.

Key words

Solitary Tinamou; new record; Itaara; Serra Geral escarpment; threatened species.

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Introduction

Tinamus solitarius (Vieillot, 1819), the Solitary Tinamou, is a large (length 52 cm, weight 2 kg), terrestrial game bird with solitary habits. It was formerly distributed throughout the entire Atlantic Forest region; however, today it is mainly confined to the largest habitat remnants within its original range and is extirpated in some places (del Hoyo et al. 1992, Sick 1997, Straube et al. 2004).

The species is globally (IUCN 2016) and nationally (ICMBio 2014) classified as Near Threatened. In several Brazilian states of the Atlantic Forest domain it is currently a threatened species: Critically Endangered in Espírito Santo (Simon et al. 2007), Endangered in Minas Gerais (Copam 2010) and Rio de Janeiro (Alves et al. 2000), and Vulnerable in Paraná and São Paulo (Straube et al. 2004, Silveira et al. 2009). In Rio Grande do Sul, it is currently classified as Vulnerable (FZB 2014) but had been listed as Critically Endangered in a previous assessment (Marques et al. 2002, Bencke et al. 2003).

At the end of the nineteenth century, *T. solitarius* was commonly found in the forests of the eastern section of the escarpment in northeastern Rio Grande do Sul (Ihering 1899). However, in the early 1980s, this species had almost completely disappeared from that state (Belton 2003). In the more recent past, it was thought

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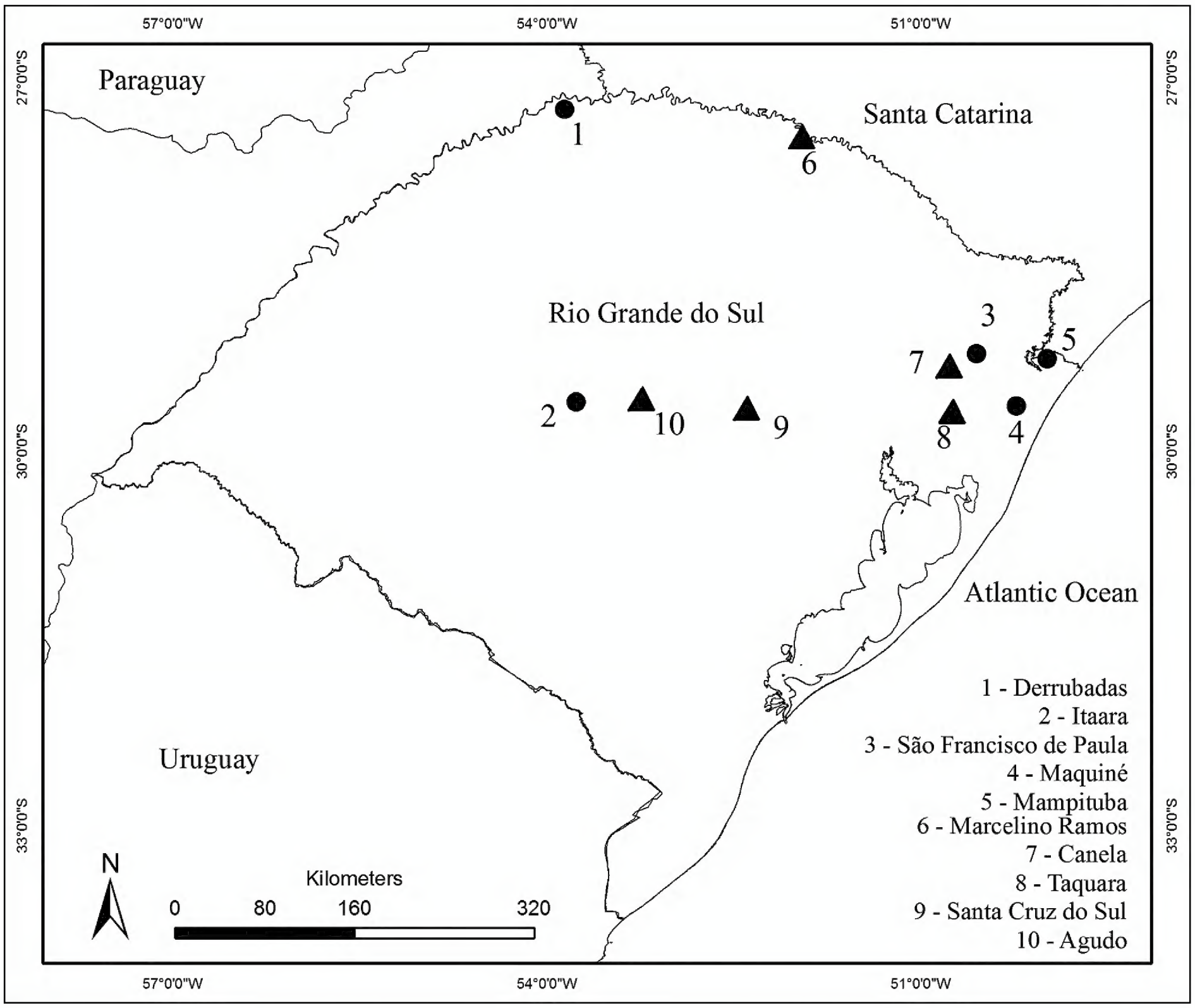

Figure 1. Map showing current (●) and historical (▲) records of *Tinamus solitarius* in Rio Grande do Sul state, Brazil.

to be restricted to a few large reserves in northern Rio Grande do Sul (e.g., Turvo State Park) and to the remaining forests along the escarpment between São Francisco de Paula and Canela (Belton 2003, Bencke et al. 2003). Other historical records include specimens collected at Taquara and Marcelino Ramos over 70 years ago (Berlepsch and Ihering 1885, Gliesch 1930), as well as birds reported to have been hunted around Santa Cruz do Sul in the 1940s and 1950s or claimed to have been recorded near Agudo in the 1990s (Bencke 1997) (Fig. 1).

Recent records are from the eastern portion of the escarpment in the Pró-Mata Nature Research and Conservation Center, Serra Geral State Biological Reserve and Aratinga State Ecological Station (Bencke and Kindel 1999, Bencke et al. 2003, Fontana et al. 2000). Other photographic and audio records are available on online databases such as the Xeno-canto, eBird, and the Macaulay Library at the Cornell Lab of Ornithology. All these are from Maquiné (http://www.xeno-canto.org; XC353537 and XC353525) and São Francisco de Paula (http://www.ebird.org; List S39838626e; http://www.macaulaylibrary.org; ML71573911), in areas already covered by the known records.

Breeding of *T. solitarius* in Rio Grande do Sul was documented in Turvo State Park in October 2003 (Maurício et al. 2013). Eggs were also found at Serra Geral State Biological Reserve in Maquiné (December 2004) and at Osório (January 2007) (Maurício et al. 2013).

Based on this information, we report a new locality for *T. solitarius* in central Rio Grande do Sul, which confirms the continued existence of this species at the southern edge of its historical range.

Methods

Sporadic expeditions were carried out to areas of the escarpment in central Rio Grande do Sul encompassing the municipalities of Santa Maria and Itaara. Reports by the local community about the presence of *T. solitarius* motivated the accomplishment of periodic expeditions aimed at finding and documenting the species in this region. The study area (centered at 29°33′49″ S, 053°43′46″ W) is in private properties in the municipality of Itaara, on the Serra Geral escarpment. The original vegetation is semideciduous forest. For the visual and photographic records, we used a fixed

Figure 2. Photographic record of the *Tinamus solitarius* in the municipality of Itaara, Rio Grande do Sul State, Brazil (http://www.wikiaves.com.br; WA2227823).

blind installed inside the forest to allow the view of 2 nature trails, upstream and downstream. The observations occurred twice a week for 2 months (April and May 2014), between 2:00 pm and 04:45 pm, and the observer remained sitting in the blind with a 55–300 mm zoom camera. After this first period of observations, efforts continued in the study area sporadically.

Results

New records. Brazil: Rio Grande do Sul: Itaara: near the Arroio Grande stream (29°33′50.47″ S, 053°43′48.00″ W), Ivan Luiz Brondani, 9 May 2014 (first record); Brazil: Rio Grande do Sul: Itaara: near the Arroio Grande stream (29°33′22.17″ S, 053°42′26.36″ W), Ivan Luiz Brondani, 3 August 2016 (Fig. 2); Brazil: Rio Grande do Sul: Itaara: near the Arroio Grande stream (29°33′22.17″ S, 053°42′26.36″ W), Ivan Luiz Brondani, 8 August 2016 (last record).

Identification. On all occasions, birds were identified based on their large size, ochre line along side of the neck, and olivaceous-gray back, barred with dark color (del Hoyo 1992). Size was the main characteristic used to distinguish the species from other species of Tinamidae present in the study area (e.g., *Crypturellus obsoletus* (Temminck, 1815) and *Crypturellus tataupa* (Temminck, 1815) personal observation).

Discussion

Specimens were seen in a private property in the forested valley of the Arroio Grande stream, which is a tributary of the Vacacaí-Mirim River. The municipality of Itaara is extensively covered with native forests. The mapping of permanent preservation areas revealed their importance, since forests correspond to 43.2% of the whole territory (Fensterseifer et al. 2014). The highly rugged relief possibly helped prevent these forests from being removed in the past and the large size of some remnants may be contributing to the maintenance of this population of *T. solitarius*.

Historical records of *T. solitarius* along the escarpment extended west to Santa Cruz do Sul and possibly Agudo (Bencke 1997, Belton 2003). Itaara is located more or less at the same latitude and about 50 km to the west of these locations and currently represents the extreme southern limit of this species' geographical distribution. The persistence of isolated populations of *T. solitarius*

in central Rio Grande do Sul was suggested by Bencke (1997). This population is isolated from the 2 other existing populations of Rio Grande do Sul, 1 inhabiting Turvo State Park and the other in the eastern portion of the Serra Geral escarpment, between the São Francisco de Paula National Forest and the Serra Geral National Park.

It is worth noting that an isolated population of another threatened tinamid, *Crypturellus noctivagus noctivagus* (Wied, 1820), which was thought extinct in the state (Bencke et al. 2003), was also discovered recently in central Rio Grande do Sul (municipality of São Sepé; Corrêa et al. 2010). Historical data suggest that this species, like *T. solitarius*, occurred along the Serra Geral escarpment from Torres to Santa Maria (Belton 2003). These recent findings make the central region of Rio Grande do Sul an important area for research and survey of these and other species of conservation concern.

As *T. solitarius* is a large and relatively well-known species in rural areas, it would be of great interest to use it in environmental education programs for forest conservation and to prevent hunting as suggested by Straube et al. (2004). The conservation plan for *T. solitarius* in Paraná assigns high priority and crucial importance to the creation of protected areas where the species has significant populations (IAP 2009). Our new data of *T. solitarius* on the western escarpment of the Serra Geral indicate the need for continued monitoring of the species as well as for the establishment of public and/or private reserves for its protection.

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Authors' Contributions

ILB collected the data, ERB, VPD and MMK wrote the manuscript.

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